

The Impact Threat and Public Perception

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Recent popular movies have raised public consciousness of the very real possibility of a comet or asteroid collision with the Earth, and a news report last year implying that asteroid 1997 XF11 had a distinct chance of hitting the Earth in the year 2028 further caught the public's eye. The report of possible impact was withdrawn the very next day, and the public perceived either that astronomers had made mistaken calculations, or that the pre-discovery observations found that day had been responsible for the revised prediction. But in fact, the original report of the possibility of impact in 2028 was simply a premature assessment. The XF11 affair has demonstrated the need for clarity and precision in public communications dealing with the possibility of Earth impact, as well as the importance of peer review before results are released to the press.

This year, another potentially hazardous asteroid, 1999 AN10, has made the news, and this time there is indeed a remote chance of collision. Although impact is not possible during the asteroid's primary close approach in 2027, the uncertainties allow for a remarkably close passage, and embedded within the encounter's uncertainty region are many narrow "keyholes" which could bring the asteroid back for a close approach in a later year. Three keyholes have been identified which could perturb the asteroid onto trajectories that collide with the Earth in the years 2044, 2046, or 2039. At the time of this writing, the estimated impact probability for 1999 AN10 is on the order of 1 in 500,000, larger than for any other known object, but still significantly less than the probability of an undiscovered asteroid of equivalent size striking the Earth before 2044. Additional astrometric measurements of 1999 AN10 will likely drive its impact probability down to near-zero, but this may not happen for years, testing the public's reaction to a lingering remote possibility of impact. A side effect of the increasing discovery rate for Near Earth Objects will be a growing number of cases like 1999 AN10.